APPENDIX C

Specifications for MDA Gas Detectors

Appendix C contains general instrument specifications for MDA toxic gas detectors. In Building 2, these detectors are used to monitor the vapor concentrations of anhydrous hydrazine, monomethyl hydrazine and NO_x when liquid propellants are on site. They are a key component of Astrotech's detection and monitoring program. The detectors combine the use of a special chemical-specific detection tape with microprocessor control for speed, accuracy and specificity. MDA detectors are portable and Astrotech has encased them in special explosion-proof clear plastic cases. The concentration alarm consists of a continuous tone and a steady alarm light-emitting device. Two factory-set alarm levels are available for each chemical, as detailed in the specifications that follow. Astrotech monitors at the lower concentrations. In addition to the two alarm levels, response times and MDA chemcassette part numbers are listed in Appendix C.

TLD-1
Toxic Gas
Detector

Guide
To
Operation

TLD-1
Toxic Gas
Detector

Appendix

General Instrument Specifications

Alarm Setting:	Factory set at 1 or 2 times TLV of the target gas for all gases except Diisocyanates (5 ppb or 20 ppb). Gas and alarm level indicated on faceplate of instrument.
Detection Technique:	Chemcassette Detection System
Alarm Indications:	Audio and visual alarms; SPDT relay contacts.
Voltage:	115 VAC 50/60 Hz or 230 VAC 50/60 Hz (± 10%)
Power:	20 Watts
Fuse Type:	5 × 20 mm
Fuse Rating:	F 250 mA/250 V (115 VAC systems); F 125 mA/250 V (230 VAC systems); F 630 mA/250 V (battery powered systems)
Battery Life: (where applicable)	Approximately 8 hours (with relays disabled)
Relay Rating:	48 VAC 5A; 28 VDC 5A
Analog Output:	Non-isolated 4-20 mA Max. load 1000 ohms (600 ohms for battery powered systems).
Dimensions:	6-½" × 8-⅜" × 7" (165 × 212 × 177 mm)
Weight:	7.5 pounds (3.4 kg); battery powered instrument 9.5 pounds (4.3 kg)
Operating Temperature Range:	32 to 104 deg. F; 0 to 40 deg. C

WARNING: THIS DEVICE NOT INTENDED FOR USE IN COMBUSTIBLE ATMOSPHERES; CONSULT MDA FOR APPROPRIATE ENCLOSURE SYSTEMS.

CAUTION: The TLD-1 should not be operated in direct sunlight or at elevated temperatures. This may cause damage to the instrument and/or Chemcassette.

Gas Response Specifications

Gas	Factory Set Alarm Level	Response Time (In seconds)	Chemcassette Part No.
Ammonia (NH_3)	25 ppm or 50 ppm	30	706002
Arsine (AsH_3)	50 ppb or 100 ppb	15	705502
Bromine (Br_2)	100 ppb or 200 ppb	60	711314
Chlorine (Cl_2)	1 ppm or 2 ppm	15	704006
Diborane (B_2H_6)	100 ppb or 200 ppb	30	705502
Diisocyanates			
HDI	5 ppb or 20 ppb	180	700506
TDI	5 ppb or 20 ppb	60	700506
PPDI	5 ppb or 20 ppb	60	700506
All others	5 ppb or 20 ppb	120	700506
Disilane (Si_2H_6)	5 ppm or 10 ppm	10	705502
Germane (GeH_4)	200 ppb or 400 ppb	240	705502
Hydrazines			
MMH	200 ppb or 400 ppb	120	708013
N_2H_4	100 ppb or 200 ppb	120	708013
UDMH	500 ppb or 1000 ppb	60	708013
Hydrogen Bromide (HBr)	3 ppm or 6 ppm	15	705505
Hydrogen Chloride (HCl)	5 ppm or 10 ppm	10	705505
Hydrogen Cyanide (HCN)	10 ppm or 20 ppm	10	704510

Gas	Factory Set Alarm Level	Response Time (In seconds)	Chemcassette Part No.
Hydrogen Fluoride (HF)	3 ppm or 6 ppm	30	705505
Hydrogen Selenide (H_2Se)	50 ppb or 100 ppb	60	705502
Hydrogen Sulfide (H_2S)	10 ppm or 20 ppm	10	701012
Nitric Acid (HNO_3)	2 ppm or 4 ppm	15	705505
Nitrogen Dioxide (NO_2)	3 ppm or 6 ppm	30	703012
Ozone (O_3)	100 ppb or 200 ppb	60	704514
Phosgene ($COCl_2$)	100 ppb or 200 ppb	30	702020
Phosphine (PH_3)	300 ppb or 600 ppb	15	705502
Silane (SiH_4)	5 ppm or 10 ppm	30	705502
Stibine (SbH_3)	100 ppb or 200 ppb	30	705502
Sulfur Dioxide (SO_2)	2 ppm or 4 ppm	15	705015
Sulfuric Acid (H_2SO_4)	250 ppb or 500 ppb	120	705505